THIS OPINION WAS NOT WRITTEN FOR PUBLICATION

The opinion in support of the decision being entered today (1) was not written for publication in a law journal and (2) is not binding precedent of the Board.

Paper No. 18

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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Ex parte JOSEF WILLER, HERMANN WENDT and VOLKER LEHMANN

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Appeal No. 1996-0189
Application No. 08/054,200[1]

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HEARD: August 2, 1999

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Before KIMLIN, JOHN D. SMITH and GARRIS, Administrative Patent Judges.

KIMLIN, Administrative Patent Judge.

DECISION ON APPEAL

This is an appeal from the final rejection of claims 1-23, all the claims in the present application. Claim 1 is illustrative:

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[1] Application for patent filed April 30, 1993.

1. A method for producing an A1-containing layer having a planar surface, onto a substrate having hole structures formed on a surface thereof, the hole structures having a high aspect ratio, comprising the steps of:

using a sputtering process, depositing an A1-containing layer to close said hole structures at said surface without filling a lower region of said hole structures;

holding said substrate at an elevated temperature; and

implementing said sputtering process at a pressure between 1.3 X $10^{-2}$ Pa and 13 Pa and at a low partial residual gas pressure.

The examiner relies upon the following references as evidence of obviousness:

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| Lamont, Jr. et al. (Lamont) | 4,756,810 | Jul. 12, 1988 |
| Foell et al. (Foell) | 4,874,484 | Oct. 17, 1989 |
| Armstrong et al. (Armstrong) | 4,994,162 | Feb. 19, 1991 |
| Wang | 5,108,570 | Apr. 28, 1992 |
| Ajika et al. (Ajika) | 5,162,262 | Nov. 10, 1992 (filed Jul. 8, 1991) |

Appellants' claimed invention is directed to a method for producing a planar aluminum-containing layer onto a substrate that has hole structures having a high aspect ratio, such that the openings of the hole structures are closed without filling the lower regions of the hole structures. The aluminum-containing layer is deposited by a sputtering process wherein the substrate is held at an elevated temperature and the deposition proceeds at the recited low pressure.

Appealed claims 1-9 stand rejected under 35 U.S.C. § 103 as being unpatentable over either Wang or Lamont in view of either Armstrong or Ajika. Claims 10-14 and 17-21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Wang or Lamont in view of Foell. In addition, claims 15, 16, 22 and 23 stand rejected under 35 U.S.C. § 103 as being unpatentable over either Wang or Lamont in view of Foell and further in view of Ajika or Armstrong.

We have carefully considered the respective positions advanced by appellants and the examiner. In so doing, we agree with appellants that the prior art applied by the examiner fails to establish a prima facie case of obviousness for the claimed subject matter. Accordingly, we will not sustain the examiner's rejections.

While Wang and Lamont, the primary references, disclose methods for producing a planar aluminum-containing layer on a substrate having hole structures by sputtering processes, the examiner recognizes that the methods of the references do not close the hole structures without filling a lower region of the structures, as required by the appealed claims. Indeed, as emphasized by appellants, it is the objective of the

references to totally fill the hole structures with the aluminum-containing composition. In addressing this deficiency of the references, the examiner points to appellants' specification which states at page 1 that "[h]ole structures with a high aspect ratio, i.e., with an aspect ratio of at least 10, particularly 50 through 200, cannot be filled up in sputtering methods." Therefore, the examiner concludes that it would have been obvious to one of ordinary skill in the art that when sputtering processes of the type disclosed by Wang and Lamont are applied to hole structures having a high aspect ratio, appellants' claimed result of not filling the lower region of the hole structures would necessarily ensue.

The flaw in the examiner's reasoning, in addition to the fact that the processes of the primary references are designed to entirely fill the hole structures, is that the claimed method defines a controlled process for producing a planar surface on the aluminum-containing layer that only partially fills the hole structures. There is simply no teaching or suggestion in the primary references, or in any of the other applied references, of a method which produces an aluminum-

containing layer having a planar surface which closes the hole structures without filling their lower regions. In the absence of such teaching or sugges-tion in the applied prior art and a total lack of motivation for one of ordinary skill in the art to perform the claimed process in view of the teachings of the prior art, we find that the examiner's rejections lack the requisite factual basis for supporting a conclusion of obviousness. In re Warner, 379 F.2d 1011, 1017, 154 USPQ 173, 177-78 (CCPA 1967). At best, the prior art of record, including appellants' acknowledged state of the art, might make it obvious to try to close, without filling, the hole structures of a substrate by sputtering an aluminum-containing layer which has a planar surface. Manifestly, obvious to try is not a proper standard for establishing obviousness under 35 U.S.C. § 103.

In conclusion, based on the foregoing, we are constrained to reverse the examiner's rejections.

REVERSED

EDWARD C. KIMLIN )
Administrative Patent Judge )
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| JOHN D. SMITH<br>Administrative Patent Judge | ) | BOARD OF PATENT<br>APPEALS AND<br>INTERFERENCES |
| BRADLEY R. GARRIS<br>Administrative Patent Judge | ) | |

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